WHAT IS CLAIMED IS:

1. A silicon nitride film forming system comprising:

a reaction vessel capable of holding a workpiece therein and provided with a first heating unit for heating the workpiece at a process temperature;

a gas supply pipe for carrying hexachlorodisilane and ammonia into the reaction vessel;

an exhaust pipe connected to the reaction vessel and provided with a second heating unit capable of heating the exhaust pipe at a temperature high enough to gasify an ammonium chloride;

an exhaust system capable of exhausting a gas from the reaction vessel through the exhaust pipe and of setting a pressure in an interior of the reaction vessel at a predetermined pressure; and

a control unit for controlling the exhaust system to set the pressure in the interior of the reaction vessel at the predetermined pressure and for controlling the supply of hexachlorodisilane and ammonia through the gas supply pipes into the reaction vessel;

wherein the control unit is capable of controlling the first heating unit to set a temperature of the interior of the reaction vessel at a temperature capable of causing the thermal decomposition of hexachlorodisilane and of controlling the second heating unit to heat the exhaust pipe at a temperature capable of gasifying the ammonium chloride.

2. The silicon nitride film forming system according to claim 1, wherein

the control unit controls the second heating unit so as to heat the exhaust pipe at 150 °C or above.

3. The silicon nitride film forming system according to claim 2, wherein

the control unit controls the second heating unit so as to heat the exhaust pipe at a temperature in the range of 190 to 200 °C.

4. A silicon nitride film forming method comprising the steps of:

placing a workpiece in a reaction vessel;

forming a silicon nitride film on the workpiece by supplying hexachlorodisilane and ammonia into the reaction vessel; and

exhausting gas from the reaction vessel through an exhaust pipe connected to the reaction vessel;

wherein a reaction chamber defined by the reaction vessel is heated at a temperature capable of decomposing hexachlorodisilane by thermal decomposition when supplying hexachlorodisilane and ammonia into the reaction vessel, and the exhaust pipe is heated at a temperature capable of gasifying an ammonium chloride when discharging the gases from the reaction vessel through the exhaust pipe.

5. The silicon nitride film forming method according to claim 4, wherein

the exhaust pipe is heated at 150 °C or above.

6. The silicon nitride film forming method according to claim 5, wherein

the exhaust pipe is heated at a temperature in the range of 190 to 200 °C.

7. A precleaning method of precleaning a silicon nitride film forming system including a reaction vessel into which hexachlorodisilane and ammonia are supplied to form a silicon nitride film on a workpiece, and an exhaust pipe connected to the reaction vessel, said precleaning method comprising the steps of:

supplying ammonia into the reaction vessel; and

discharging ammonia from the reaction vessel into the exhaust pipe.

8. The precleaning method according to claim 7, wherein

the reaction chamber is heated at a temperature in the range of 500 to 900 °C, while ammonia is supplied into the reaction vessel.

9. The precleaning method according to claim 7, wherein

the exhaust pipe is heated at 100 °C or above, while

ammonia is discharged into the exhaust pipe.

10. The precleaning method according to claim 7, wherein

a pressure within an interior of the exhaust pipe is set at pressures in the range of 665 to 66500 Pa, while ammonia is discharged into the exhaust pipe.

11. The precleaning method according to claim 7 further:

comprising a step of supplying an inert gas through the reaction vessel into the exhaust pipe, before the step of supplying ammonia into the reaction vessel.

12. The precleaning method according to claim 7 further:

comprising a step of supplying an inert gas through the reaction vessel into the exhaust pipe, after the step of supplying ammonia through the reaction vessel into the exhaust pipe.